Russian Journal of General Chemistry 2011 vol.81 N5, pages 824-830

Kinetics and mechanism of quaternization of tertiary phosphines with unsaturated carboxylic acids. Kinetic studies of the reactions in aprotic solvents

Salin A., Sobanov A., Bakhtiyarova Y., Khabibullin A., Galkin V.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

Data obtained while studying the kinetics of quaternization of tertiary phosphines with the unsaturated carboxylic acids in the series of aprotic solvents indicate the participation of a second molecule of acid playing the part of the external proton donor in this process. Quantitative analysis of the effect of solvent within the frames of the Koppel-Palm equation showed that the main contribution in the reaction rate belongs to the nucleophilicity of medium while the effects of polarity and electrophilicity are smaller. The results obtained suggest the step-by-step mechanism of interaction including the formation of the zwitterionic intermediate on the reaction pathway common for the solvents with different proton activity. © Pleiades Publishing, Ltd., 2011.

http://dx.doi.org/10.1134/S1070363211050057